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Installation,
Operating
Instructions
and Parts List

CULLIGAN GOLD SERIES™

AUTOMATIC WATER FILTERS
with Cullar®, Cullneu® or Cullsan® Media
MODELS FROM 2001

Culligan®

Printed in USA

Attention Culligan Customer:

The installation, service and maintenance of this equipment should be rendered by a qualified and trained service technician. Your local independently operated Culligan dealer employs trained service and maintenance personnel who are experienced in the installation, function and repair of Culligan equipment. This publication is written specifically for these individuals and is intended for their use.

We encourage Culligan users to learn about Culligan products, but we believe that product knowledge is best obtained by consulting with your Culligan dealer. Untrained individuals who use this manual assume the risk of any resulting property damage or personal injury.

⚠ WARNING - Prior to servicing equipment, disconnect power supply to prevent electrical shock.

⚠ WARNING - If incorrectly installed, operated or maintained, this product can cause severe injury. Those who install, operate, or maintain this product should be trained in its proper use, warned of its dangers, and should read the entire manual before attempting to install, operate or maintain this product.

THIS SYSTEM IS NOT INTENDED TO BE USED FOR TREATING WATER THAT IS MICROBIOLOGICALLY UNSAFE OR OF UNKNOWN QUALITY WITHOUT ADEQUATE DISINFECTION BEFORE OR AFTER THE SYSTEM.

CULLIGAN INTERNATIONAL COMPANY
One Culligan Parkway
Northbrook, Illinois 60062-6209
847.205.6000

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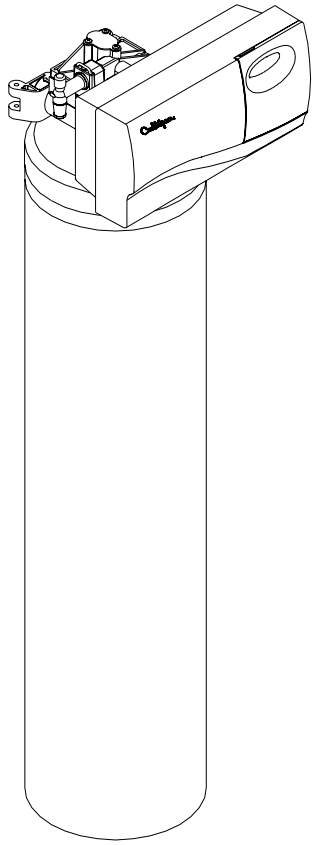

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Introduction

The *Culligan Gold Series* water filters are tested and validated by WQA against WQA S-200.

The *Culligan Gold Series* Filtr-Cleer® filter has been tested and validated by WQA against S-200 for Class IV (≥15µm to <30µm) particulate reduction as verified and substantiated by test data.

The *Culligan Gold Series* Cullar® filter has been tested and validated by WQA against WQA S-200 for the effective reduction of chlorine up to 120,000 gallons for the 9" filter and 180,000 gallons for the 12" filter.

The *Culligan Gold Series* Cullneu® filter has been tested and validated by WQA against S-200 for neutralization up to 14,500 gallons for the 9" *Cullneu* filter and 21,750 gallons for the 12" *Cullneu* filter as verified and substantiated by test data.

For installations in Massachusetts, the Commonwealth of Massachusetts Plumbing Code 248 CMR shall be adhered to. Consult your licensed plumber for installation of the system. This system and its installation must comply with state and local regulations.

SAFE PRACTICES

Throughout this manual there are paragraphs set off by special headings.

NOTICE: Notice is used to emphasize installation, operation or maintenance information which is important, but does not present any hazard.

Example: NOTICE: *The nipple must extend no more than 1 inch above the cover plate.*

⚠ **CAUTION**: Caution is used when failure to follow directions could result in damage to equipment or property. Example:

⚠ **CAUTION:** ***Disassembly while under water pressure can result in flooding.***

⚠ **WARNING**: Warning is used to indicate a hazard which could cause injury or death if ignored. Example:

⚠ **WARNING! ELECTRICAL SHOCK HAZARD! UNPLUG THE UNIT BEFORE REMOVING THE COVER OR ACCESSING ANY INTERNAL CONTROL PARTS.**

SERIAL NUMBERS

The control valve serial number is located on the back of the timer case.

The media tank serial number is located on the top surface of the tank.

NOTICE: *Do not remove or destroy the serial number. It must be referenced on request for warranty repair or replacement.*

This publication is based on information available when approved for printing. Continuing design refinement could cause changes that may not be included in this publication.

Specifications

***Culligan Gold Series* Water Filters with *Cullar, Cullneu, or Cullsan* Media**

	9-INCH	*12-INCH*
GENERAL		
Mineral Tank Size	9x45 in.	12x45 in.
Control	Hi-Flo Power Valve	Hi-Flo Power Valve
Timer	Electronic	Electronic
Temperature Limits	33-120°F	33-120°F
Water Pressure Limits	20-120 psi	20-120 psi
Water Pressure Limits (Canada)	20-90 psi	20-90 psi
Electrical Requirements	24V/50-60 Hz	24V/50-60 Hz
Electrical Power Consumption, Min./Max.	3 Watts/45 Watts	3 Watts/45 Watts
Overall Height	51 in.	51 in.
FILTR-CLEER		
Rated Service Flow @ Pressure Drop	9.0 gpm @ 8 psi	12.0 gpm @ 15 psi
Minimum Practical Filtration Size	15 microns	15 microns
Maximum Particulate Matter	150 NTU	150 NTU
Maximum Suspended Solids	150 mg/L	150 mg/L
Drain Flow, Maximum[1]	4.5 gpm	7.0 gpm
pH Limitation	6.0 - 9.5	6.0 - 9.5
Recharge Time[2]	30 min.	30 min.
Recharge Water Consumption, Av.[3]	90 gal.	140 gal.
Freeboard[4]	20 ± 1.5 inches	19 ± 1.5 inches
CULLAR		
Rated Service Flow @ Pressure Drop	4.0 gpm @ 2.0 psi	6.0 gpm @ 4.0 psi
Drain Flow, Maximum[1]	2 gpm	5.5 gpm
pH Limitation	5.0 - 11.0	5.0 - 11.0
Recharge Time[2]	30 min.	30 min.
Recharge Water Consumption, Av.[3]	40 gal.	110 gal.
Cullar Media Volume	0.75 cu. ft.	1.5 cu. ft.
Cullsan® Underbedding Media Amount	10 lbs. (.1 ft^3)	20 lbs. (.2 ft^3)
Freeboard[4]	22 ± 1.5 inches	24 ± 1.5 inches
Rated Capacity	120,000 gallons	180,000 gallons
CULLNEU		
Rated Service Flow @ Pressure Drop	4.0 gpm @ 1.0 psi	6.0 gpm @ 3.0 psi
Drain Flow, Maximum[1]	3.5 gpm	5.5 gpm
pH Limitation*	5.2 to ≥ 6.8	5.2 to ≥ 6.8
Recharge Time[2]	30 min.	30 min.
Recharge Water Consumption, Av.[3]	70 gal.	110 gal.
Cullneu Media Volume	1.1 cu. ft.	1.6 cu. ft.
Freeboard[4]	13 ± 1.5 inches	18 ± 1.5 inches
Rated Capacity	14,500 gallons	21,750 gallons

1 Backwash at 120 psi (830 kPa).
2 Factory Settings.
3 Factory Settings and 120 psi line pressure.
4 Measured from top of media surface to top surface of tank threads (backwashed and drained).
*NOTE: Under dynamic conditions, it may be necessary to mix five parts *Cullneu* with one part *Cullneu* C to effectively raise the pH.

Preparation

The success of the installation will depend to a great extent on advanced planning and preparation. Careful attention to the unit's location, accessibility to electrical and drain facilities, and the availibility of the proper tools will ensure a professional looking installation. Of utmost importance is the assurance that the filter has been properly applied and meets all specifications.

APPLICATION

Correct application is directly associated with the performance and life expectancy of any water conditioner. It is important, therefore, to understand how your Culligan® Water Filter functions, and to know its capabilities and limitations so that a correct application can be made. By following the guidelines and recommendations set forth in this manual, you can be certain your conditioner is applied correctly.

FILTR-CLEER

The *Filtr-Cleer* Automatic Water Filter is capable of removing particulate matter down to 15 microns particle size. It will not remove color, organics, collodial turbidity or dissolved solids. Some applications follow:

- Removal of suspended matters in any water system.
- Removal of particulate matter, such as clay, mud, etc.
- Prefiltration of oxidized iron ahead of an automatic or manual softener.
- Removal of light sand. NOTICE: *If sands cannot be removed from the Filtr-Cleer tank during backwashing, a sand trap should be installed.*
- After the retention tank when a Cul-Cleer® system is used to correct hydrogen sulfide or collodial suspension problems.

The quality and number of gallons of filtered water between backwashes will depend upon the amount, type, and size of the particulate matter being filtered. If a water sample is sent to our laboratory, where application of a *Filtr-Cleer* unit is contemplated, write "*Filtr-Cleer* Analysis" on the sample tag. Send an additional sample of water for a standard water analysis. The laboratory will test for Nephelometric Turbidity Units (NTU) and suspended solids (mg/L). The sample will also be filtered through 10 micron filter paper and NTU run on a filtered sample. If the NTU of the raw water exceeds 150, suspended solids exceed 150 mg/L or the filtered water through the 10 micron filter paper is of an unacceptable quality, a *Filtr-Cleer* filter may not be applicable. As a guide, the U.S. Public Health Drinking Water standards states the turbidity should not exceed 1 NTU. The exact number of gallons filtered between backwashes cannot be given because of many variables.

CULLAR FILTER

Automatic Water Filter with *Cullar* Media will control chlorine taste and odor, and will also remove most objectional organic colors. It will not remove hydrogen sulfide. It is important to note that whenever the cause of an objectionable taste or odor has not been established, Health Authorities should determine if water is safe to drink. If bacterial contamination is present, a *Cul-Cleer* system is indicated. Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

CULLNEU FILTER

Automatic Water Filter with *Cullneu* Media will neutralize slightly acid water (pH of 5.2 to ≥ 6.8) and thus help to prevent unsightly brown or green stains due to corrosion of household plumbing. If the pH is from 5 to 6, 1 part of *Cullneu* C media should be mixed with 5 parts of Cullneu media to provide additional neutralizing capability. If the water to be treated has a pH less than 5, a high hardness, or a high carbon dioxide level, *Cullneu* may not be applicable; a solution feeder should be used. Since *Cullneu* adds hardness, it should be used prior to a softener. NOTICE: *Under dynamic conditions it may be necessary to mix 5 parts Cullneu with 1 part Cullneu C to effectively raise the pH.*

In order to size and apply the equipment correctly, a complete analysis of the water supply should be obtained.

COMPONENT DESCRIPTION

The water conditioner is shipped from the factory in several cartons. Remove all components from their cartons and inspect them before starting installation.

Control Valve Assembly - Includes the 5-cycle regeneration control valve and the Accusoft® Microprocessor. Small parts packages will contain additional installation hardware, and the conditioner Owner's Guide.

Media Tank - Includes Tripl-Hull™ media tank.

Outlet Manifold - Includes the manifold for use in the *Tripl-Hull* tank.

Bypass Valve - Includes the molded bypass valve, the interconnecting couplings, and the assembly pins.

Media Pack - Includes the filter media, see the Filling Procedure located in the Installation section for proper filling instructions.

TOOLS AND MATERIALS

The following tools and supplies will be needed, depending on installation method. **Observe all applicable codes.**

All Installations
- Safety glasses
- Phillips screwdrivers, small and medium tip.
- Gauge assembly (PN 00-3044-50 or equivalent)
- Silicone lubricant (PN 00-4715-07 or equivalent) - **DO NOT USE PETROLEUM-BASED LUBRICANTS**
- A bucket, preferably light-colored
- Towels

Tools & Materials
- Torch, solder and flux for sweat copper connections
- Threading tools, pipe wrenches and thread sealer for threaded connections.
- Saw, solvent and cement for plastic pipe connections.
- Drain line, 1/2" (PN 00-3030-82, gray, semi-flexible; or PN 00-3319-46, black, semi-rigid; or equivalent)
- Thread sealing tape
- Pressure reducing valve (if pressure exceeds 125 psi [860 kPa], PN 00-4909-00 or equivalent)
- Pipe and fittings suited to the type of installation

APPLICATION

Pressure - If pressure exceeds 125 psi (860 kPa), install a pressure reducing valve (see materials checklist). On private water systems, make sure the minimum pressure (the pressure at which the pump starts) is greater than 20 psi (140 kPa). Adjust the pressure switch if necessary.

⚠ CAUTION: ***The use of a pressure reducing valve may limit the flow of water in the household.***

Temperature - Do not install the unit where it might freeze, or next to a water heater or furnace or in direct sunlight. Ensure that the system is installed so that it is only supplied with cold water.

LOCATION

Space requirements - Allow 6-12 inches (15-30 cm) behind the unit for plumbing and drain lines.
Drain facilities - Choose a nearby drain that can handle the rated drain flow (floor drain, sink or stand pipe). Refer to the Drain Line Chart, Table 1 (page 10), for maximum drain line length.

NOTICE: Most codes require an anti-siphon device or airgap. Observe all local plumbing codes and drain restrictions. The system and installation must comply with all state and local laws and regulations.

Electrical facilities - A 10-foot cord and wall mount plug-in transformer are provided. The customer should provide a receptacle, preferably one not controlled by a switch that can be turned off accidentally. Observe local electrical codes.

Installation

PLACEMENT

Refer to Figure 1 for system placement.

- Set the media tank on a solid, level surface near water, drain and electrical facilities.

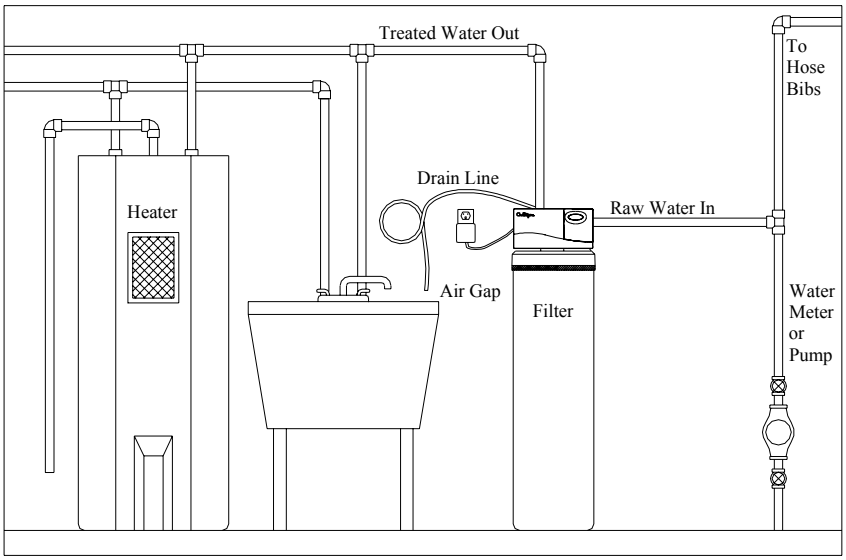


FIG. 1

FILLING PROCEDURE

FILTR-CLEER WATER FILTER

The 9" *Filtr-Cleer* filters are shipped with one media pack, and the media for the 12" *Filtr-Cleer* filters are shipped with two media packs. The *Filtr-Cleer* media needs to be loaded into the tank according to the following procedure to ensure its proper operation. Verify that you have the correct amounts of media on site prior to loading the tank.

- Cover the top of the manifold with a clean rag.
- Place a wide-mouth funnel in the tank opening.
- Open the media pack(s) by cutting along the bottom of the carton and lifting up to expose the four individual media packages. Notice: *The performance of the filter may be severely affected if the media are not added in the proper sequence shown.*
- With no water in the tank, slowly pour the *Cullsan* U media into the tank.
- With no water in the tank, slowly pour the *Cullsan* G-50 media into the tank and level.
- With no water in the tank, slowly pour the *Cullsan* A media into the tank and level.
- Slowly pour the Cullcite® media into the tank and level.
- Thread the inlet strainer into the tank until it bottoms out.

CULLAR FILTERS

The 9" *Cullar* filters are shipped with 3/4 cubic foot carton of carbon and a 20 lb bag of *Cullsan* underbedding, the 12" *Cullar* filters are shipped with 2 - 3/4 cubic foot cartons of carbon and a 30 lb bag of *Cullsan* underbedding..

- Cover the top of the manifold with a clean rag.
- Place a wide mouth funnel in the tank opening.
- Open the bag of *Cullsan* underbedding. Pour the entire contents into the tank. Shake the tank to level the media.
- Open the bag of carbon. Slowly pour the carbon into the tank via the funnel. The carbon should be within 17"-19" of the top of the tank for the 9" and within 15"-17" on the 12" filters.
- Thread the inlet strainer into the tank until it bottoms out.
- Fill the tank with water and allow the media to soak for 24-48 hours. The water level in the tank will decrease as the media soaks up water. Add water to the tank to keep the media submerged so all of the media gets saturated.

CULLNEU FILTERS

Cullneu filters are shipped with 2 bags of *Cullneu* with 9" filters and 3 bags of *Cullneu* with 12" filters.

- Cover the top of the manifold with a clean rag.
- Place a wide mouth funnel in the tank opening. The *Cullneu* media should be added with no water in the tank.
- For 9" *Cullneu* filters, slowly pour the contents of both bags of media into the tank, the media will be within 13" of the top of the tank.
- For 12" *Cullneu* filters, slowly pour the contents of the three bags of media into the tank, the media will be within 18" of the top of the tank.
- Thread the inlet strainer into the tank until it bottoms out.

NOTICE: DO NOT OVERFILL. Overfilling will result in excess media being lost to drain during backwash, possibly plugging the control valve. Shake the tank to level the media.

MOUNT THE CONTROL VALVE

See Figure 2 for a visual on mounting the control valve to the tank.
- Assemble the o-rings, located in the parts part, to the tank adapter.
- The valve adapter o-ring sits on the first step on the adapter. See Figure 3.

NOTICE: Do not push the top o-ring down to the flange surface on the adapter.
NOTICE: The larger of the two o-rings in the parts pack goes between the adapter and the valve, do not stretch the smaller o-ring onto the top of the tank adapter.
- Lubricate the large inside bore of the valve body, the top o-ring on the tank adapter and the outlet manifold o-ring with silicone lubricant.
- Screw the adapter into the tank until the adapter bottoms out on the tank flange.

NOTICE: The adapter only needs to be tightened hand-tight to the tank flange.
- Align the manifold with the center opening in the valve, and press the valve onto the adapter firmly.

NOTICE: Make sure to push the valve straight down onto the manifold. If the valve is cocked it may cause the o-ring to slip off the manifold.
- Assemble the tank clamp to the control, and tighten the clamp screw.

NOTICE: The clamp and valve will be able to rotate on the tank until pressure is applied. Align the control onto the tank prior to tightening the clamp. The o-ring may cut or tear if the control is rotated after the clamp is tightened.

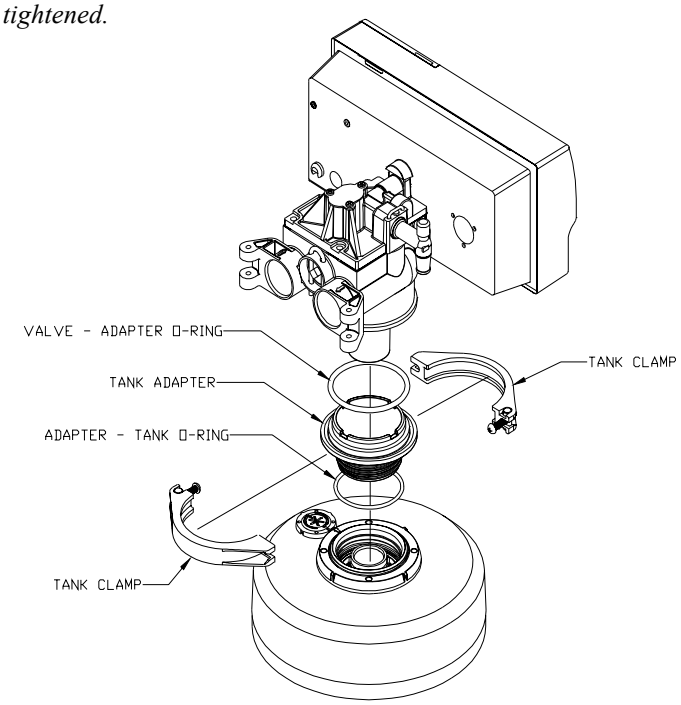


FIG. 2

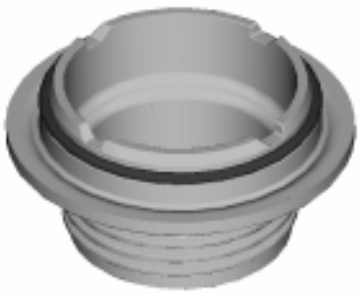


FIG. 3

PROPER FLOW CONTROL INSTALLATION

As shipped from the factory, each control is equipped with a 2.0 gpm flow control for the 9" *Cullar* filters. Additional flow controls are included in the parts pack with each control for conversion for use with other filter tanks. Refer to Table 1 for installation of the proper flow control.

TABLE 1

Filter	Flow Control	Color
9" *Cullar*	2.0 gpm	Brown
12" *Cullar*	5.5 gpm	Black
9" *Cullneu*	3.5 gpm	Green
12" *Cullneu*	5.5 gpm	Black
9" *Filtr-Cleer*	4.5 gpm	Red
12" *Filtr-Cleer*	7.0 gpm*	Black (Thin)

* Use with flow control spacer provided. Figure 4 shows installation of the flow control with the spacer.

For the backwash flow control conversion, refer to figure 4 and the instructions listed below.

- Remove the drain clip and pull the drain elbow straight off.
- Remove thebackwash flow control located behind the elbow. Put the flow control specified in Table 1 in its place.

NOTICE: For the 12" Filtr-Cleer, insert the plastic spacer after the 7 gpm flow control washer. See Figure 4.

NOTICE: The number on the flow control should face into the valve body.

- Insert the drain elbow back into the valve body and re-assembly the drain clip.

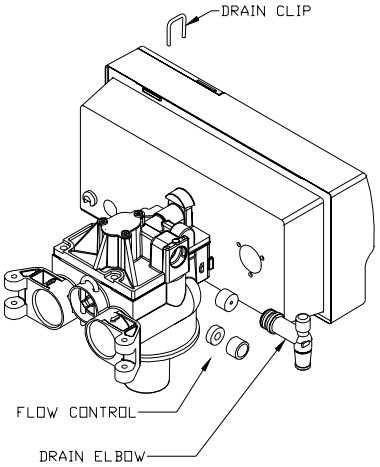


FIG. 4

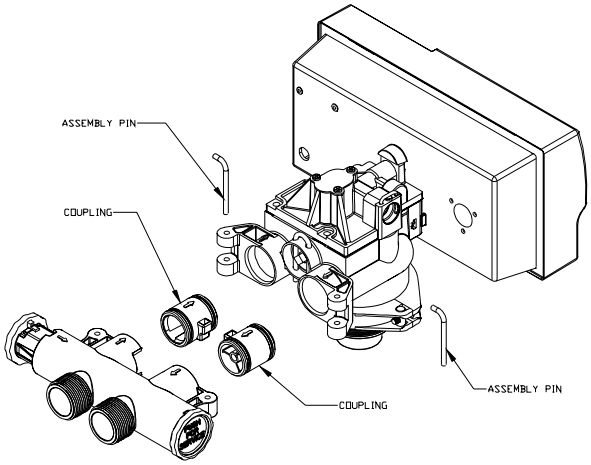


FIG. 5

PLUMBING CONNECTIONS

Shipped with each filter is a *Culligan* bypass valve, which is used to connect the softener to the plumbing system. The bypass valve can be directly plumbed into the system, or can be connected with the optional sweat connection kit, P/N 01-0107-83.

⚠ CAUTION: ***Close the inlet supply line and relieve system pressure before cutting into the plumbing! Flooding could result!***

⚠ CAUTION: ***When making sweat connections, use care to keep heat away from the plastic nuts used to connect the plumbing to the bypass. Damage to these components may result otherwise.***

BYPASS VALVE INSTALLATION

The bypass valve connects directly to the control valve with a pair of couplings and two assembly pins (Figure 5). Lubricate all o-rings on the couplings with silicone lubricant.
NOTICE: The bypass stem can only be removed from valve on the bypass side (red knob). The bypass valve is designed so that it can be flipped over, with the bypass (red) knob on the left side of the valve. This will need to be taken into consideration if the control is plumbed in close to a wall which may prevent the stem from being easily removed.

The bypass valve has knobs that easily snap on and off of the stem. A screwdriver can be used to depress the snap lever on the stem for knob removal. The knobs have alignment tabs that mate into the notches in the bypass body to ensure that the stem is properly aligned in the bypass body. The service knob (blue) has a locking feature, which must be drpressed in order to shift the stem out of the bypass position (Figure 6).

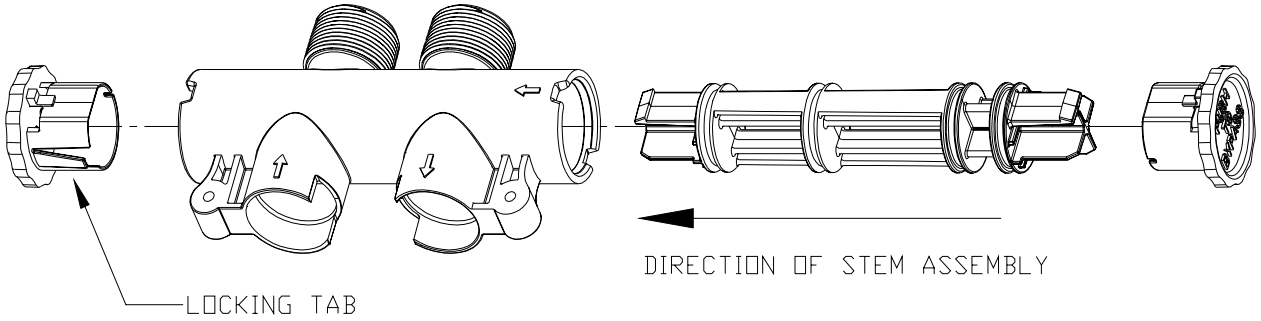


FIG. 6

NOTICE: If the ground from the electrical panel or breaker box to the water meter or underground copper pipe is tied to the copper water lines and these lines are cut during installation of the bypass valve, an approved grounding strap must be used between the two lines that have been cut in order to maintain continuity. The length of the grounding strap will depend upon the number of units being installed. In all cases where metal pipe was originally used and is later interrupted by the bypass valve to maintain proper metallic pipe bonding, an approved ground clamp c/w not less than #6 copper conductor must be used for continuity. Check your local electrical code for the correct clamp and cable size.

DRAIN LINE CONNECTION

Refer to Table 2, page 11 under the applicable tank size for drain line length and height limitations.

- Remove 1/2" pipe clamp from the small parts pack included with the control.
- Route a length of 1/2" drain line from the drain elbow to the drain.
- Fasten the drain line to the elbow with the clamp.
- Secure the drain line to prevent its movement during regeneration. When discharging into a sink, or open floor drain, a loop in the end of the tube will keep it filled with water and will reduce splashing at the beginning of each regeneration.

NOTICE: Waste connections or drain outlets shall be designed and constructed to provide for connection to the sanitary waste system through an air gap of 2 pipe diameters or 1 inch, whichever is larger.

NOTICE: Observe all plumbing codes. Most codes require an anti-siphon device or air gap at the discharge point. The system and installation must comply with state and local laws and regulations.

ELECTRICAL CONNECTION

The power cord needs to be connected to the plug-in transformer. Figure 7 shows the power cord attachement to the transformer.

NOTICE: Observe all state and local electrical codes.

NOTICE: The plug-in transformer is rated for indoor installations only.

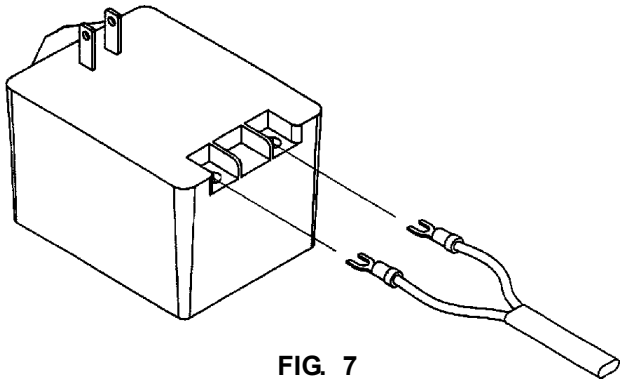


FIG. 7

TABLE 1 - DRIAN LINE LENGTH AND HEIGHT LIMITATIONS

9-INCH MODELS

Average Water Pressure	Height of Drain Discharge Above Floor Upon Which Filter Sets										
psi	4 in.	1 ft	2 ft	3 ft	4 ft	5 ft	6 ft	7 ft	8 ft	9 ft	10 ft
kPa	0.1 m	0.3 m	0.6 m	0.9 m	1.2 m	1.5 m	1.8 m	2.1 m	2.4 m	2.7 m	3.1 m
30	56	50	40	30	20	10					
210	17.1	15.3	12.2	9.2	6.1	3.1					
50	112	106	96	86	76	66	56	46	36	26	16
350	34.2	32.3	29.3	26.2	23.2	20.1	17.1	14.0	11.0	7.9	4.9
70	143	137	127	117	107	97	87	77	67	57	47
480	43.6	41.8	38.7	35.7	32.6	29.6	26.5	23.5	20.4	17.4	14.3
90	153	147	137	127	117	107	97	87	77	67	57
620	46.7	44.8	41.8	38.7	35.7	32.6	29.6	26.5	23.5	20.4	17.4
120	159	153	143	133	123	113	103	93	83	73	63
830	48.5	46.7	43.6	40.6	37.5	34.5	31.4	38.4	25.3	22.3	19.2

12-INCH MODELS

Average Water Pressure	Height of Drain Discharge Above Floor Upon Which Filter Sets										
psi	4 in.	1 ft	2 ft	3 ft	4 ft	5 ft	6 ft	7 ft	8 ft	9 ft	10 ft
kPa	0.1 m	0.3 m	0.6 m	0.9 m	1.2 m	1.5 m	1.8 m	2.1 m	2.4 m	2.7 m	3.1 m
30	44	38	28	18							
210	13.4	11.6	8.5	5.5							
50	103	97	87	77	67	57	47	37	27	17	7
350	31.4	29.6	26.5	23.5	20.4	17.4	14.3	11.3	8.2	5.2	2.1
70	129	123	113	103	93	83	73	63	53	43	33
480	39.3	37.5	34.5	31.4	28.4	25.3	22.3	19.2	16.2	13.1	10.1
90	145	139	129	119	109	99	89	79	69	59	49
620	44.2	42.4	39.3	36.3	33.2	30.2	27.1	24.1	21.0	18.0	14.9
120	153	147	137	127	117	107	97	87	77	67	57
830	46.7	44.8	41.8	38.7	35.7	32.6	29.6	26.5	23.5	20.4	17.4

Settings

The *Culligan* Automatic Water Filter is designed to perform efficiently on a wide range of water supplies. In order to ensure proper operation of the filter, and before initiating the initial recharge and putting the unit into service, the following settings need to be made.

BACKWASH

The backwash setting is important in that backwashing expands and loosens the media bed. This flushes away the particulate matter that has accumulated in the bed. The backwash interval is preset at the factory for 10 minutes, which is adequate for most water supplies. It is recommended that the backwash cycle last just long enough so that the effluent from the drain line is clear. Backwash too long and water is wasted, not long enough and the tank becomes fouled with sediment. Refer to the programming section for instructions on adjusting the backwash time.

PAUSE CYCLE

Because this Automatic Water Filter shares it timer with other water conditioning products, it momentarilly stops in a pause cycle. This setting is used in other controls for the eduction and rinsing of salt, or other regenerant chemicals. The pause cycle is factory set at 10 minutes. Refer to the programming section for instructions on adjusting the pause time.

RAPID RINSE

The rapid rinse setting settles and compacts the media after backwashing and flushes any residual particulate matter from the bottom of the filter bed before returing the filter to the service position. The rapid rinse setting is factory set at 10 minutes. Refer to the programming section for instructions on adjusting the rapid rinse time.

DIP SWITCH SETTINGS

The microprocessor has several dip switches that can be switched for various additional functions. Listed are the functions for the dip switches used on the Gold Series Filter controls.

Dip Switch	Function	Default (OFF) Position
2	Filter / Softener	Softener
4	9" - 12" Tank Settings	9" Tank
6	Delay vs. Immediate Regeneration	Delayed Regeneration
7	English vs. Metric Settings	English Settings
8	12 or 24 Hour Clock	12 Hour Clock

Refer to Table 3 and Figure 8 for setting the dipswitches. Factory shipped all dip switches are in the **off** position. *NOTICE: The end of a ball point pen works well to flip the dip switches as little force is required to flip the switches. DO NOT use a pencil as the graphite may damage the dip switch.*

TABLE 3 - Dip Switch Setting

			DIP SWITCHES									
			1	2	3	4	5	6	7	8	9	10
CONTROL TYPE	ENGLISH SETTINGS	9"	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
		12"	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
	METRIC SETTINGS	9"	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF
		12"	OFF	ON	OFF	ON	OFF	OFF	ON	ON	OFF	OFF

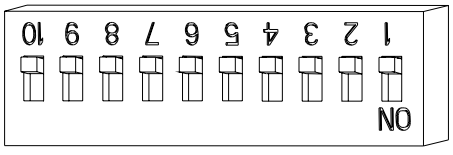


FIG. 8

Programming

Make sure the inlet water supply is turned off, then supply power to the timer. The display will power up flashing "12:00 PM". After 1 minute the motor will energize and cycle the control, without stopping, to the home position. This is required to ensure that the control is in the home position.

FIG. 11 - Circuit Board Display

The timer uses four buttons:

1. STATUS: Advance timer through display options.
2. UP ARROW: Increase the setting.
3. DOWN ARROW: Decrease the setting.
4. REGEN.: Initiate a manual regeneration.

SETTING THE MICROPROCESSOR

1. With a flashing or blank display, pressing the status button twice will move to the **Time-of-Day** adjustment. Adjust the time by using the up and down arrows. A number "1" will appear at the bottom of the display while in this mode.

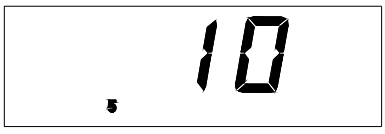
Press ▲ to increase or
▼ to decrease

2. Press status again, this displays the **Time-of-Regeneration** for delayed units, adjust using the up and down arrows. A number "2" will appear at the bottom of the display while in this mode.

Press ▲ to increase or
▼ to decrease

3. Press status again, the disply will skip setting "3" and a number "4" will appear at the bottom of the display. **This setting is not used**, and any changes made will not affect the operation of the microprocessor.

4. Press status again, this displays the **Backwash Time** in minutes. The setting can be adjusted between 1 and 40 minutes by using the up and down arrows. A number "5" will appear at the bottom of the display while in this mode.

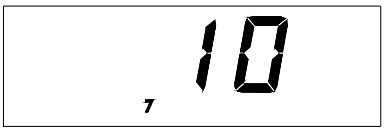


Press ▲ to increase or
▼ to decrease

5. Press status again to display the **Pause Time** in minutes. The settings can be adjusted between 1 and 15 minutes using the up and down arrows. A number "6" will appear at the bottom of the display while in this mode.

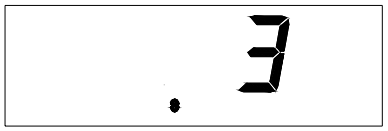
Press ▲ to increase or
▼ to decrease

6. Press status again to display the **Fast Rinse Time** in minutes. The setting can be adjusted from 5-30 minutes by using the up and down arrows. A number “7” will appear at the bottom of the display while in this mode.



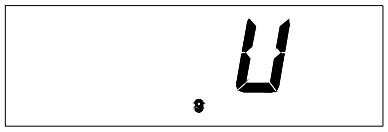
Press ▲ to increase or
▼ to decrease

7. Press status again, the display will show the **Regeneration Interval**. The setting can be adjusted from 1-42 days using the up and down arrows. A number “8” will appear at the bottom of the display while in this mode.



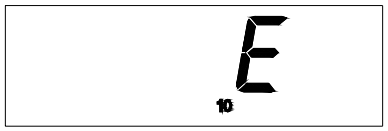
Press ▲ to increase or
▼ to decrease

8. Pressing status again will display the **Lock/Unlock** feature. A “U” in the display signifies an unlocked microprocessor, while a “L” will lock the settings except for the time of day. To toggle between the two settings press both arrow keys simultaneously. A number “9” will appear at the bottom of the display while in this mode.



Press ▲ simultaneously
▼

9. Pressing status again brings up the ability to **Enable/Disable** the screen blanking. To have the display constantly lit, press the up arrow, a “d” for disable will appear in the display. Pressing the up arrow again displays an “E”, signifying that display blanking is enabled. A number “10” will appear at the bottom of the display while in this mode.



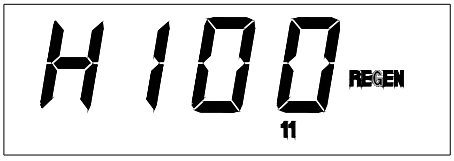
Press ▲ to change

NOTICE: Programming changes are not locked into the microprocessor memory until the control completes a regeneration cycle. To initiate a manual regeneration, press the REGEN. button twice, the "REGEN" enunciator will flash on the display. Refer to the Manual Cycling section on how to step through the regeneration stages.

Manual Cycling

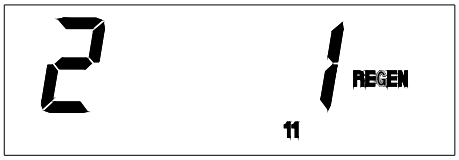
The *Culligan* microprocessor can be indexed through the various regeneration stages. For all steps, the cycle numbers do not appear, or change, until the motor stops.

1. Press the status button to move past steps 1-10 until the display is blank. Push the up arrow. The number "11" icon will light up. An "H" will appear in the display. The control is in the HOME position. Pressing the regen button once will light the 'REGEN' icon.

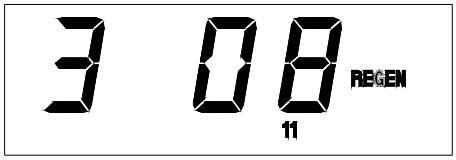


2. Press the regen button one more time. The 'REGEN' icon will blink, and the motor will advance the control. A '1' will appear. The unit is now in the BACKWASH position. The numbers to the right indicate the time remaining for the cycle.

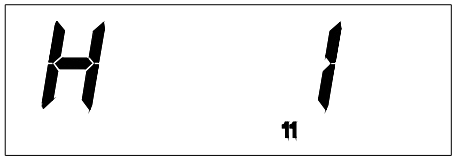
3. Press the up arrow. A '2' will appear in the display, along with the cycle time remaining. The control is in the PAUSE cycle.



4. Press the up arrow. A '3' will appear in the display, along with the cycle time remaining. The control is now in the FAST RINSE cycle.



5. Press the up arrow. An 'H' will appear in the display. The unit is in the HOME position. The 'REGEN' enunciator is no longer blinking.



NOTICE: Because the filter software is common to other products, the display will initially display 'H 1', and will flip to the value set in option 4, 'H 100' after 1 minute. It will then count down too zero, count for 1 minute, and reset to the option 4 value. This does not affect the operation of the control.

6. Press the status key. Time-of-Day appears in the display.

Service Check

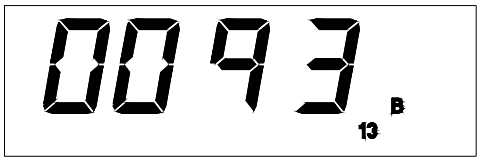
The service check mode allows one to view the instantaneous flow rate, the days since the last regeneration, the total number of regenerations, the regenerations in the past fourteen days, and the gallons remaining.

To enter the service check mode, follow these steps:

1. Press the status key to move past steps 1-10 until the display is blank.

2. Press the down arrow. The number '13' and an "A" will light at the bottom of the display. The display will indicate the number of regenerations that have occurred in the last 14 days.

3. Press the down arrow. The number '13' and a 'B' will light at the bottom of the display. The display will indicate the total number of regenerations this control has cycled through.



4. Press the down arrow. The number '14' will light at the bottom of the display. The number in the display indicates the number of days since last regeneration.

NOTICE: Pushing the up arrow at any of these displays will immediately bring you to the control position display, the number '11' will light at the bottom of the display.

Operation

DISPLAY

There are two display modes on the *Culligan* microprocessor. As shipped from the factory, the display of the board is initially set to turn off if there has been no keyboard activity after a 1 minute period. Touching any key will relight the display. The display can be set so that it will always display the time. For information on changing the display lighting option, refer to the programming section.

REGENERATION

There are several conditions that will cause the control to trip a regeneration. The 'REGEN' enunciator will light when the control has signaled for a regeneration. The 'REGEN' enunciator will flash while the control is in regeneration. The following are conditions that will call for regeneration:

1. When the time clock has counted past the set number of days.
2. At the preset time, when the 'REGEN.' button is depressed once. 'REGEN.' will light.
3. Immediately, when the 'REGEN." button is depressed twice. 'REGEN.' will light and blink.
4. Immediately, if power to the unit has been off for more than 3 hours.

START-UP

- Close the main water supply valve.
- Set the bypass valve to the bypass position.
- Ensure that all faucets at the installation site are closed.
- Direct the drain line discharge into a bucket where flow can be observed.
- Plug the transformer into a 120 Volt, 60 Hz, single-phase receptacle.
- Wait 1 minute for the control to energize the motor and home itself.
- Set the timer to the correct time of day.
- Open the main supply valve.
- Initiate an immediate regeneration to move the control into the backwash position.
- Refer to the section on manual cycling for information on cycling the control through its positions.
- When in the backwash position, **slowly** shift the bypass to the service position until water flows.
- Allow the tank to fill slowly until water flows from the drain line.
- When the unit is filled with water, return the timer to the service position and proceed with setting the microprocessor. Refer to the programming section.
- Initialte a full regeneration prior to leaving the installation site.

NOTICE: For Cullar and Cullneu models, bypass and unplug the control and allow the media to soak for 24 to 48 hours. After allowing the media to soak, plug the control in, shift the bypass to the service position, and verify that the mircroprocessor settings are correct.

NOTICE: Unplugging the Culligan Gold Series Filter will not affect any of the timer settings. Once programmed in, the settings will be stored indefinitely. In the event of a power failure the time-of-day setting will be stored for 1-2 days. If longer time storage is necessary, a battery backup is available. Refer to the Service Manual for additional information.

BEFORE LEAVING THE INSTALLATION SITE

Explain the operation of the filter to the customer. Make sure the customer knows that there will be new sounds associated with the recharging of the unit.

Check the approiate filter model box in the Owner's Guide, and then sign and date the corresponding performance data sheet. Leave the Owner's Guide with the customer.

Clean up the unit and installation site, removing any soldering, or pipe threading, residues from the equipment and surrounding area with a damp towel.

CULLNEU FILTER REFILLING

As water passes through a *Cullneu* water filter, the media slowly dissolvers and neutralizes the water. The rate at which the *Cullneu* media dissolves depends on a number of factors such as temperature, flow rate and pH. Because these factors are so variable, it is often difficult to determine how often new *Cullneu* media should be added. Tables 4 and 5 show the recommended intervals for inspection and replenishment of *Cullneu* media. The following procedure should be used to determine when new media should be added.

- Press the 'REGEN.' button twice to initiate a recharge cycle.
- Unplug the unit when it stops in the backwash position, and shift the bypass valve to the bypass position.
- Disconnect the tank clamp on the valve and remove the valve from the tank.
- Remove the tank adapter, and the inlet strainer from the tank.
- Measure the distance from the top of the media to the top of the threads on the tank flange (This distance is the freeboard). For 9" filters, if the freeboard is greater than 19 inches, add enough Cullneu to decrease the freeboard to 13 inches. For the 12" filters, if the freeboard is greater than 24 inches, add enough Cullneu to decrease the freeboard to 18 inches.
- Make sure that there is no Cullneu media on the o-ring sealing surface of the tank flange, and re-assemble the inlet strainer and tank adapter. Assemble the control back to the adapter, and tighten the tank clamp.
- Place the bypass back into the service position, plug the unit back in, and allow the filter to complete its recharge cycle.

⚠ WARNING: SOME WATER SUPPLIES CONTAIN POTENTIALLY HAZARDOUS GASES. DO NOT INSPECT THE INTERIOR OF THE TANK USING A SPARK OR HEAT SOURCE, OR AN EXPLOSION MAY RESULT.

NOTICE: It is possible to check the freeboard height by dropping a dowel rod, of 1/2" diameter or less, into the A/S port hole, and then measuring how far in it drops. Marks could be made on the rod which could be used to quickly gage if the media needs to be replenished.

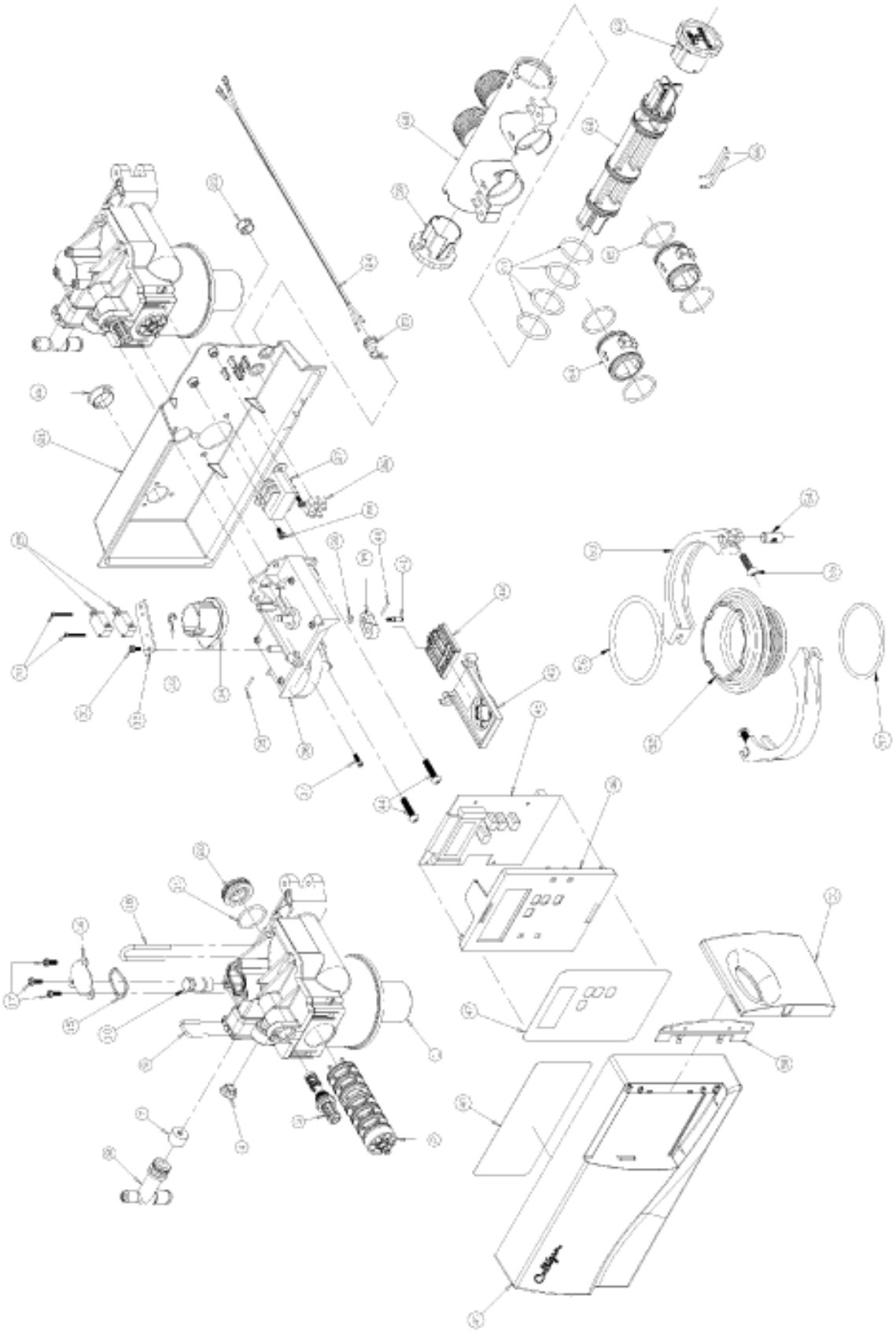
TABLE 4

9-INCH NEUTRALIZERS; MINERAL REPLENISHMENT INTERVAL			
CO_2 (GPG)	2 Persons	3	4
	150 gpd	225	300
3	Every 6 Months	Every 3 Months	Every 3 Months
4			
5			
6	Every 3 Months		USE CHEMICAL FEED
7			
8			
9			
10			

TABLE 5

12-INCH NEUTRALIZERS; MINERAL REPLENISHMENT INTERVAL					
CO_2 (GPG)	2 Persons	3	4	5	6
	150 gpd	225	300	375	450
3	Annually	Every 6 Months			
4				Every 3 Months	
5					
6	Every 6 Months		Every 3 Months		
7					
8					USE CHEMICAL FEED
9					
10					

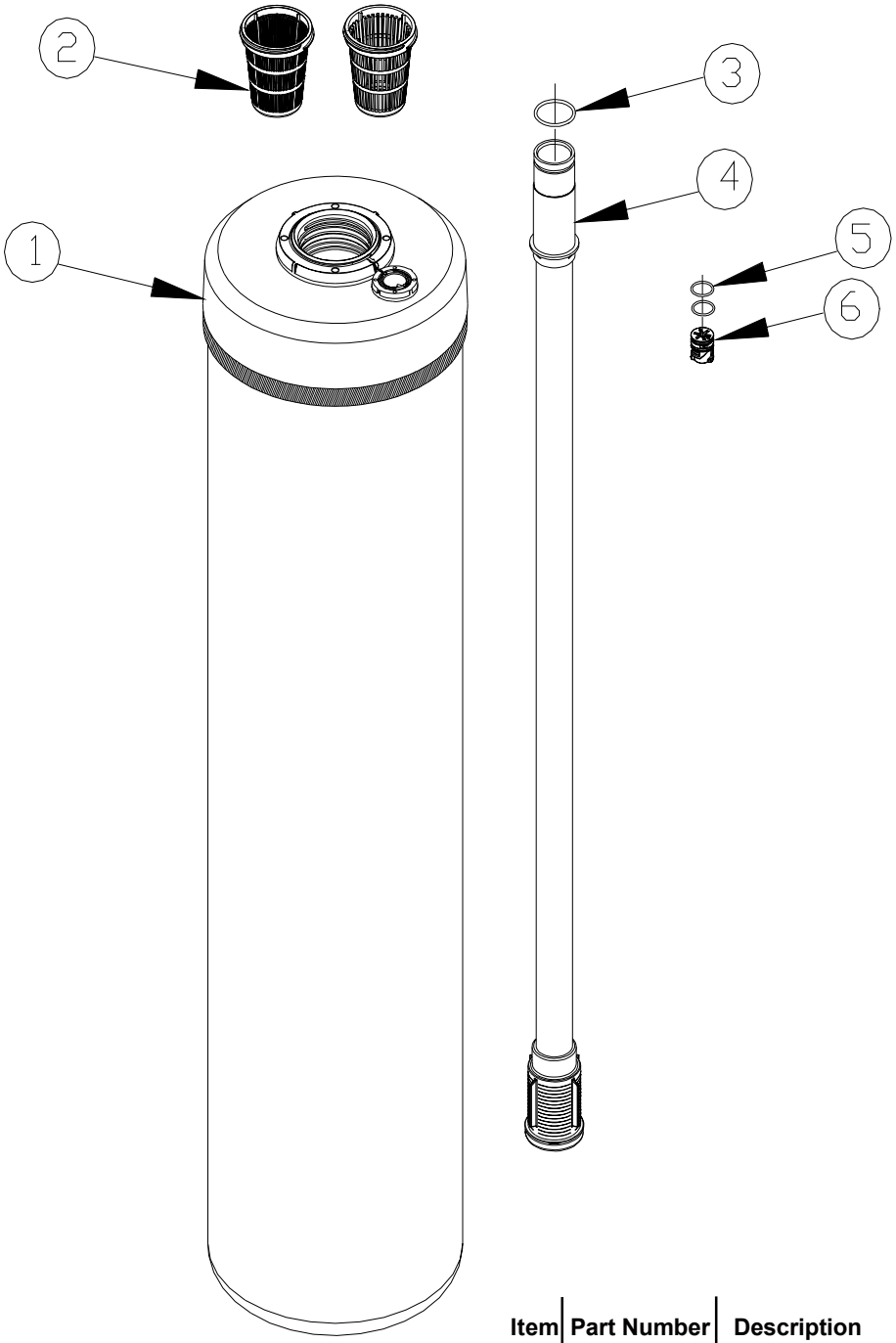
Parts List - Control



Item	Part No.	Description
—	01-0145-65	Control Valve Assembly - Gold Series
1	01-0139-76	Control Valve
‡ 2	01-0130-83	Seal Pack Assembly
‡ 3	01-0012-58	Eductor Sleeve Filter
‡ *	P0-4479-86	O-Ring, Eductor Sleeve, Small O-Ring (25/Kit)
‡ *	P0-3084-07	O-Ring, Eductor Sleeve, Large O-Ring (25/Kit)
4	00-4464-75	Plug
7	P0-3316-35	Backwash Restrictor, 2.0 GPM (10/Kit)
	P0-3316-36	Backwash Restrictor, 3.5 GPM (10/Kit)
	00-3316-37	Backwash Restrictor, 4.5 GPM
	00-4010-34	Backwash Restrictor, 5.5 GPM
	A0-7080-08	Backwash Restrictor, 7 GPM (Needs Spacer)
	01-0144-26	Backwash Spacer, 7 GPM (With A0-7080-08)
8	00-4468-35	Drain Elbow Assembly w/O-Ring
9	00-4473-87	Retainer, Drain Elbow
‡ 10	00-4486-68	Plug, Eductor
‡ *	P0-3084-37	O-Ring, Eductor Plug (25/Kit)
‡ 15	00-4457-97	Gasket
16	00-4010-22	Eductor Port Cover
17	00-4486-87	Screw
18	00-4481-28	Retainer, Rear Body Plug
‡ 19	P0-4449-14	O-Ring, Rear Seal (10/Kit)
20	00-4481-26	Rear Body Plug
21	01-0140-27	Control Back Plate
22	01-0139-66	Plug, 1.000" Snap-in
23	01-0064-98	Plug, .562" Snap-in
24	A0-4880-16	Power Cord
25	01-0003-72	Strain Relief
26	00-3318-48	Terminal Strip
27	01-0128-45	Transformer
28	P1-0084-73	Screw (10/Kit)
‡ 29	00-4452-44	Switch
30	00-4486-86	Screw
31	00-3184-55	Screw
32	00-4010-40	Switch Bracket
33	P1-0130-43	Retaining E-Ring (10/Kit)
34	01-0130-31	Cam
35	00-4435-59	Roll Pin
36	01-0141-79	Drive Motor & Bracket Assembly 24V/60Hz
37	01-0017-84	Screw
38	00-3183-54	Nut
39	00-4452-21	Bellcrank
40	00-4452-46	Roll Pin
41	01-0126-49	Follower
42	01-0126-48	Yoke
43	01-0126-47	Bracket
44	00-3184-52	Screw
45	01-0130-94	Circuit Board
46	01-0140-28	Circuit Board Mounting Plate
47	01-0128-68	Timer Label
48	01-8823-57	Setting Label, Filter
49	01-0140-26	Cover
50	01-0140-30	Hinge
51	01-0140-29	Door
52	01-0139-58	Tank Adapter
53	01-0139-59	Tank Clamp
54	01-0136-69	Clamp Pin
55	00-318-383	Screw
56	01-0140-31	O-Ring
57	00-4400-52	O-Ring
59	01-0139-63	Knob, Bypass - Service
60	01-0139-61	Bypass Body, 1-1/4" NPT
61	01-0130-95	O-Ring
62	01-0139-65	Bypass Stem
63	01-0139-64	Knob, Bypass - Bypass
64	01-0080-66	Coupling
65	01-0090-99	O-Ring
66	01-0090-75	Assembly Pin
*	01-0129-56	Wall Mount Transformer
*	01-0136-70	1-1/4" Bypass Assembly
*	01-0129-58	Wire Harness, Cam
*	00-4517-01	Hose Clamp, Drain
*	01-0138-39	Back-up Battery

‡ Recommended Spare Parts
* Not Illustrated

Parts List - Tank Assembly



Item	Part Number	Description	Qty.
1	01-0112-82	Tank Replacement, 9", Empty	
	01-0112-83	Tank Replacement, 12", Empty	
2	01-0098-47	Top Strainer - Fine Slot	
	01-0111-95	Top Strainer - Wide Slot	1
3	01-0090-99	O-Ring, Manifold	1
4	01-0096-15	Outlet Manifold	1
5	00-4704-29	O-Ring, Plug	2
6	01-0100-46	Plug	1